

REMARKS

Claims 1-4 and 6-16 are pending. Applicants have amended claims 1, 8 and 9 merely to advance prosecution of the present application and not to limit the scope of these claims.

Claim Rejections – 35 USC § 102

Claims 1-4 and 6-16 were rejected under 35 U.S.C. § 102(e) over del Puerto (U.S. Patent No. 6,369,874). Applicants respectfully traverse this rejection for at least the following reason.

The Office Action contends that del Puerto discloses all the structure set forth in the claims. Specifically, the Office Action contends that del Puerto discloses a radiation system (114) to supply a projection beam of radiation; a support structure to support a patterning structure (120), the patterning structure serving to pattern the projection beam according to a desired pattern; a substrate table(128) to hold a substrate (126); and a projection system (122E-F) to project the patterned beam onto a target portion of the substrate, wherein a space (108) containing at least part of said projection system is at a pressure of about 0.1 to 10 Pa and contains argon, nitrogen, helium or a mixture thereof.

In response to the arguments filed January 30, 2003, the Office Action contends that the pressure zone 108 in del Puerto comprises seventy percent of helium and is maintained at about 1 mTorr and further contends that the light source 114 which is located in pressure zone 108 can be considered “at least part of the projection system” and argon is used as a barrier gas which flows into pressure zone 106 (and 104). Applicants respectfully disagree.

Applicant reiterates the argument filed January 30, 2003. Specifically, that the lithography system of del Puerto simply has three chambers 104, 106 and 108 separated by partitions 109. Pressure zone 104 houses the optics of the lithography system 100 including mirrors 122A-F, i.e., “projection system.” Pressure zone 106 houses wafer scan device 130, wafer stage 128 and wafer 126. Pressure zone 108 houses EUV light source 114. Therefore, contrary to the Office Action contention, the light source 114 is not part of the projection system. As recited in the claims, the projection system is disposed in an optical path between the patterning structure and the substrate table and projects a patterned beam of radiation onto the substrate. The chamber 108 does not comprise any part of the projection system, i.e. the light source 114 is not part of the projection system (mirrors 122A-F) because the light source

114 is not disposed between the reticle “patterning structure” 120 and the wafer stage “substrate table” 128. The beam does not become patterned until striking the reticle 120 housed in chamber 104. Thus, no element present in the chamber 108 plays a role in projecting a patterned beam of radiation onto a substrate. Moreover, the light source 114 most closely corresponds to the radiation system, already separately recited in claim 1. Therefore, del Puerto does not disclose, teach or suggest “a projection system disposed in an optical path between said patterning structure and said substrate table to project the patterned beam onto a target of the substrate,” as recited in claim 1 or “projecting a patterned beam of radiation onto a target portion of a layer of radiation-sensitive material on a substrate with a projection system, said projection system being disposed in an optical path between a patterning structure and said substrate,” as recited in claims 8 and 9.

In addition, the atmosphere in pressure zone 104, i.e., the zone housing the projection system, comprises hydrogen gas supplied by photoresist outgassing (col. 5, lines 45-46 in del Puerto). The atmosphere in pressure zone 106 comprises hydrogen gas, carbon dioxide, and other hydrocarbon molecules which are supplied by photoresist outgassing (col. 5, lines 63-65 in del Puerto). The atmosphere in pressure zone 108 comprises about 70% helium and about 30% xenon (col. 5, lines 8-10 in del Puerto).

Furthermore, in col. 10, lines 12-29, del Puerto merely teaches that a barrier gas system 911 (Figure 9 in del Puerto) injects argon into funnel section 402 of chimney 304 to prevent hydrocarbon outgas molecules from reaching pressure zone 104. The argon mixes with the hydrocarbon outgas molecules and the mixture is carried away from chimney 304 into pressure zone 106. Consequently, contrary to the Office Action contention, argon does not penetrate into pressure zone 104 and thus is not present in pressure zone 104 which houses the “projection system.” Argon can only be present in pressure zone 106 which houses the wafer stage. Thus, the pressure zone 104 housing the projection system merely has an atmosphere comprising hydrogen gas, carbon dioxide, and other hydrocarbon molecules which are supplied by photoresist outgassing.

Therefore, del Puerto does not disclose, teach or suggest “a space containing at least part of said projection system is at a pressure of about 0.1 to 10 Pa and contains argon, nitrogen, helium or a mixture thereof,” as recited in claim 1. Similarly, del Puerto does not disclose, teach or suggest “supplying a continuous flow of argon, nitrogen, helium or a mixture thereof to a space containing at least part of said projection system,” as recited in claim 8 and claim 9.

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Accordingly, Applicants respectfully submit that claims 1, 8 and 9, and claims 2-4, 6, 7, and 10-16 which are directly or indirectly dependent from claim 1, are patentable and respectfully request that the rejection of claims 1-4 and 6-16 under § 102(e) be withdrawn.

CONCLUSION

In view of the foregoing, the claims are now in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned at the telephone number listed below.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

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